

# QUEST

ADVENTURES IN THE WORLD OF SCIENCE

## FLIGHT II

34

GIANT BAT POSTER

THREE PROJECTS

MAKE A GLIDER



### FACT FILES ON:

- *Supersonic bombers*
- *Airport 2000*
- *Thermals*
- *Spy planes*
- *Formation flying*
- *Gliders*
- *Man-powered flight*
- *Jump-jets*



# INSIDE THIS PACK

## FACT FILES

- Microlights ► Dogfights ► Air displays ► Hang gliders
- Airports of the future ► Aerial warfare ► Swing-wings ► G force
- Aerobatics ► Seadromes



MODEL  
Glider



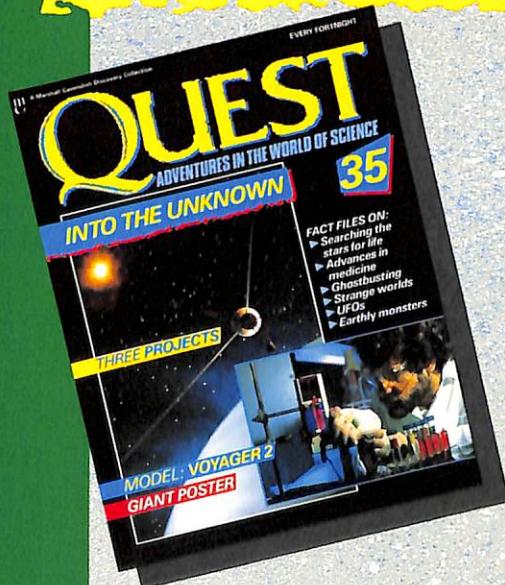
## POSTER

The Horseshoe bat



## THREE SCIENTIFIC PROJECTS

## COMING IN QUEST 35 INTO THE UNKNOWN

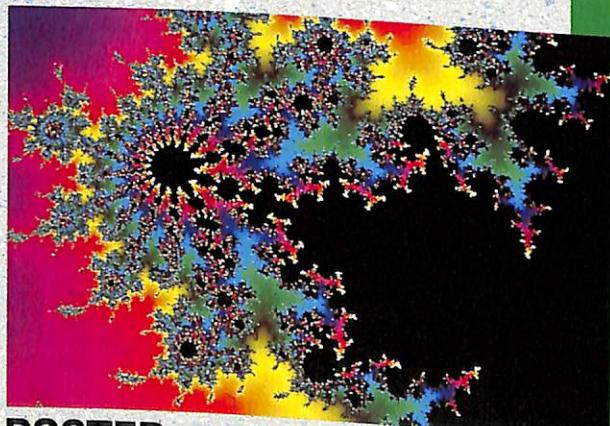


## FACT FILES INCLUDE:

- Probing the Planets
- The paranormal
- Exploring the 'roof of the world'
- UFOs
- Searching for life in the galaxy
- Medical frontiers



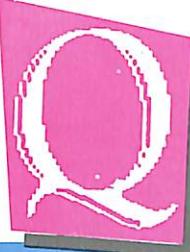
MODEL  
Space journey



POSTER  
Chaos

ISSN 1350-3766





# PROJECTS

## FLIGHT II

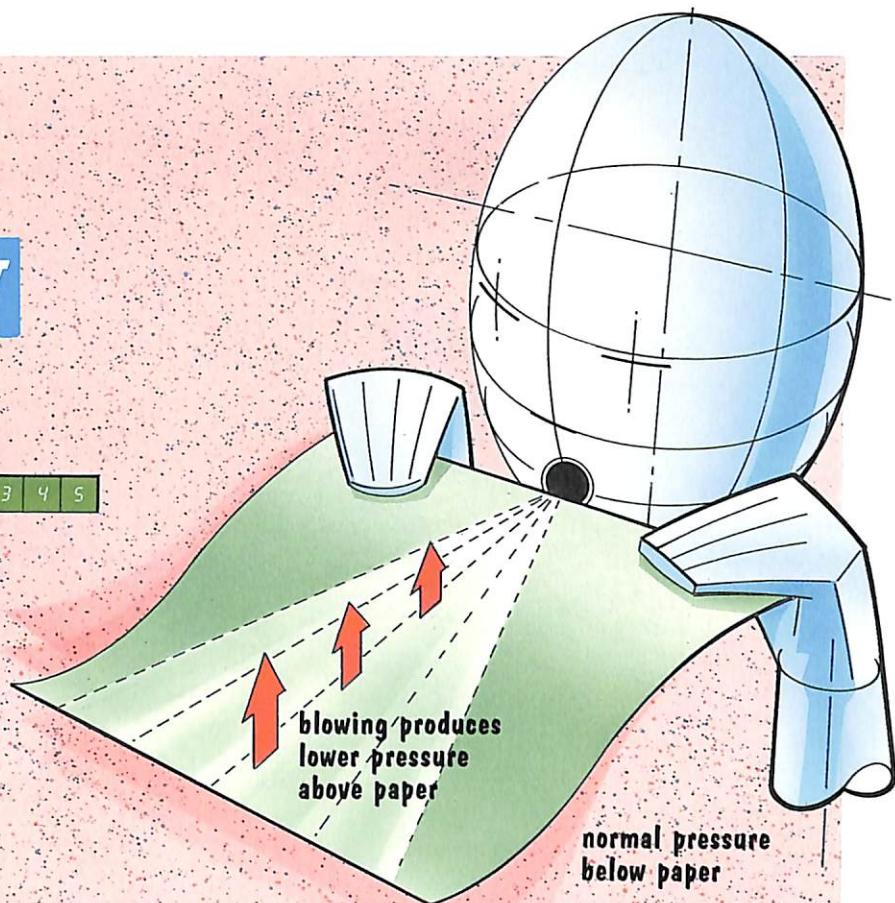
- How can you discover the secret of flight with a piece of paper?

### LIFTING BY BLOWING

1 3 4 5

The Benoulli effect is the key to modern aviation.

If you hold a sheet of writing paper in front of your mouth it will simply hang down. Now blow along the upper side of the paper. You will find that the paper rises into a horizontal position. Because the blowing produces an area of low pressure above the paper, the normal pressure below is higher.

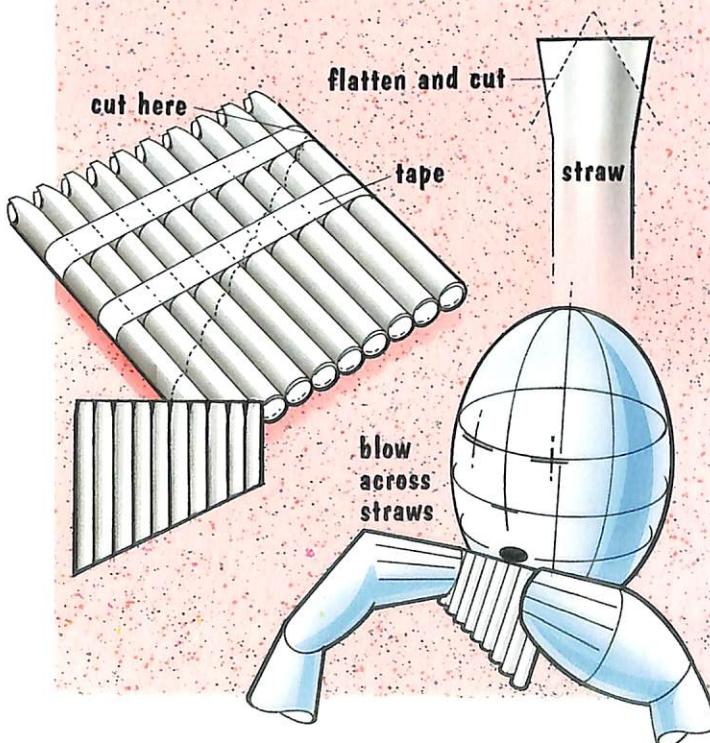


### ADVENTURES IN THE WORLD OF SCIENCE

### STRAW PIPES

1 2 4 5

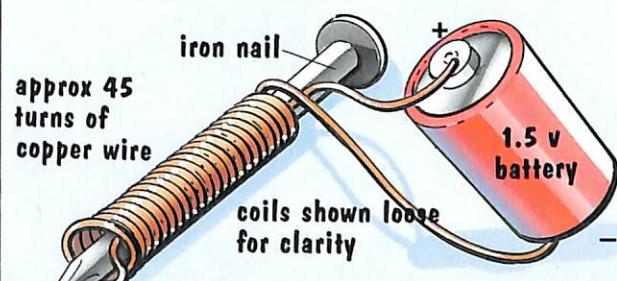
You need 10 straws, sticky tape and scissors. Squeeze one end of each straw and cut it as shown. Lay the straws on a table and tape them together in a straight line. Cut the straws diagonally as shown. To use the pipes, blow across the ends.



### AN ELECTRO-MAGNET

1 2 3 5

You need an iron nail about 5-7 cm long, 1-2 metres of glazed copper wire, a 1.5 volt battery and a small magnetic weight, such as a paperclip. Wind the wire closely around the nail about 45 times. Then, connect the battery to both ends of the wire. You will find that the nail becomes an electro-magnet and picks up the paperclip.

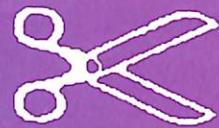


### PROJECT INFORMATION

1 2 4 5

Each QUEST project and model has its own difficulty rating:  
 1 very simple, 2 simple,  
 3 intermediate, 4 advanced,  
 5 complicated

**WARNING!**  
 Every care has been taken to ensure projects are as safe as possible. However, parents should supervise all projects. The publisher can accept no liability for injury.



# MODEL ASSEMBLY INSTRUCTIONS

1 2 3 4 5

## You will need

Scissors • Ruler • Craft knife •  
Glue • Plasticine • Paper clips

Before cutting out the pieces, score along all broken lines with a blunt edge and ruler to make folding and gluing easier. Study the ASSEMBLY DIAGRAM to see how the pieces fit together, and use dotted lines as a guide for positioning.

**NB** Younger children will need supervision when using a craft knife.

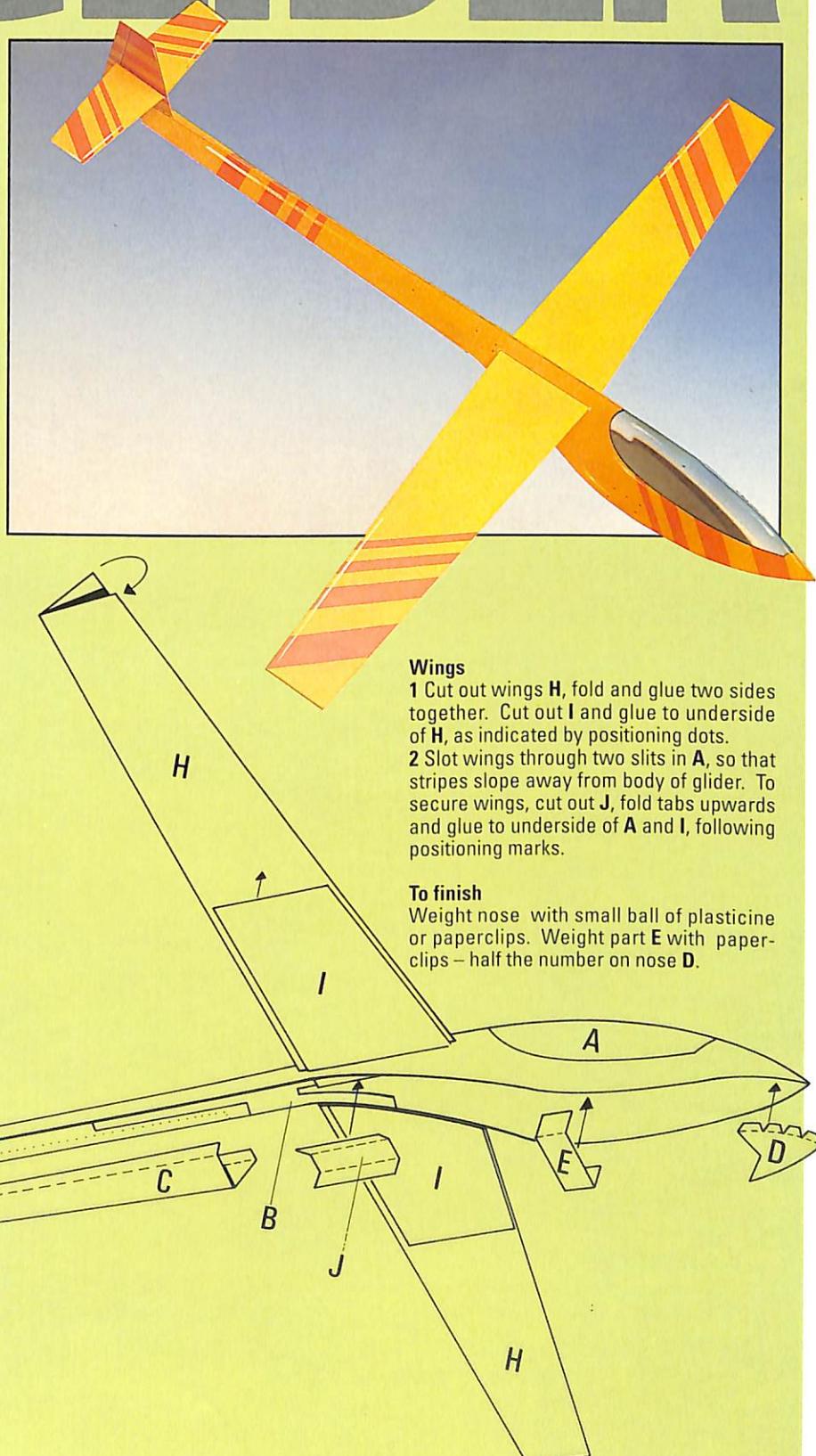
## To make up

### Body of glider

- 1 Cut out upper body part **A**, remembering to cut slits marked by solid lines (with craft knife). Glue canopy into shape.
- 2 Cut out **B**, fold and glue to **A**, following positioning dots (see ASSEMBLY DIAGRAM). Cut out underside **C**, fold to shape and glue tabs to **A**, ensuring that stripes on **A** and **C** match.
- 3 Cut out underside of nose **D** and glue into place. Cut out **E**, fold tabs down and glue one tab to underside of each side of **A**, following positioning marks (see ASSEMBLY DIAGRAM).

### Tail

- 1 Cut out rudder **F**, fold in two along broken line and fold tabs back. Glue two sides together, but not tabs. To attach rudder to body, snip last broken line at end of **A** and insert narrow end of **F**, gluing underside of **F**'s tabs to inside of **C**.
- 2 Cut out tailpiece **G**. Glue tab to one side of **G**, following dotted markers. Repeat with second part **G**.



### Wings

- 1 Cut out wings **H**, fold and glue two sides together. Cut out **I** and glue to underside of **H**, as indicated by positioning dots.
- 2 Slot wings through two slits in **A**, so that stripes slope away from body of glider. To secure wings, cut out **J**, fold tabs upwards and glue to underside of **A** and **I**, following positioning marks.

### To finish

Weight nose with small ball of plasticine or paperclips. Weight part **E** with paperclips – half the number on nose **D**.

# LYERS



**The horseshoe bat** may be found in Africa, especially the tropics, and also parts of Europe, Asia and Japan. It gets its name from the strange shape of its nose-leaf, used to focus sounds emitted through the nose when hunting prey. Broad wings make it very agile in the air - second only to the humming bird. It can form huge colonies, numbering many thousands. It lives on insects and roosts in caves, hollow trees or buildings.

Dr Morley Read/Science Photo Library

**BATS - THE ONLY MAMMALS THAT CAN FLY**

## DEATH ON THE WING

Bats' wings are paper-thin areas of elastic skin extending from belly and back to legs and tail. The skin is interlaced with fine muscle fibres, blood vessels and nerves.

The bat spreads its wings by extending its arms and slender finger and toe bones, which stretch across and strengthen the wings. In flight, the bat flaps its wings using its large pectoral (upper chest) muscles.

The bat's wings sweep slightly forwards on the downstroke (below). This stroke creates the necessary lift and forward thrust. On the upstroke (centre), it folds its wings slightly, reducing air resistance as it pulls them back ready for another downstroke (bottom).

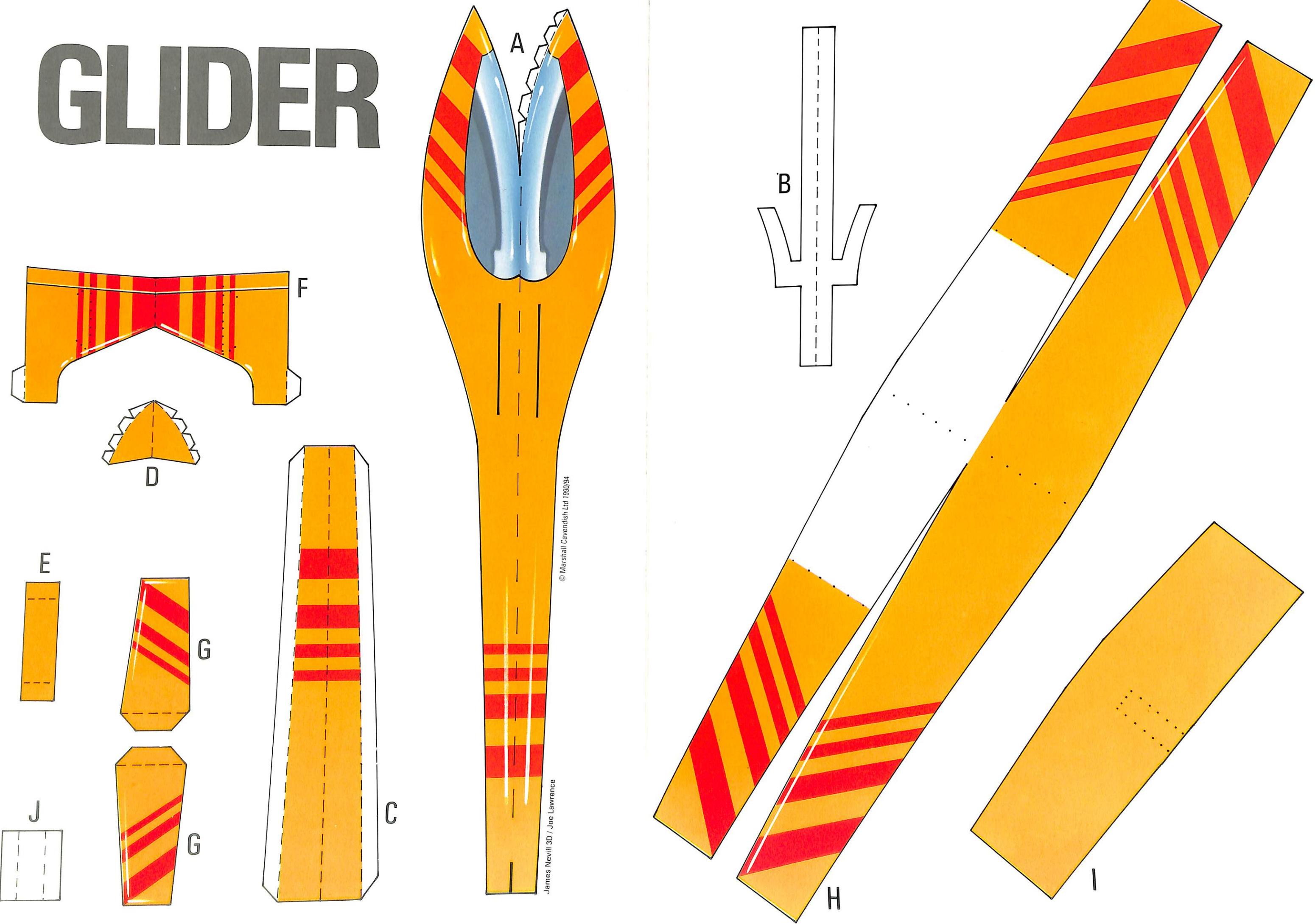
Many species of bat can catch moths or other insects on the wing with ease, thanks to a lethal combination of superlative flying skill and the ability to pinpoint prey by echolocation (see LIVING WORLD, page 28).

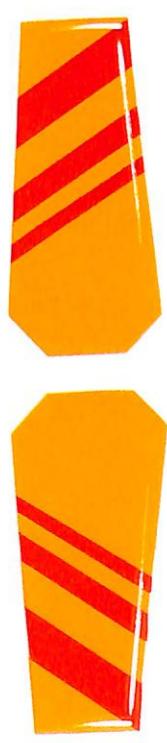


QUEST



# GLIDER





# QUEST

ADVENTURES IN THE WORLD OF SCIENCE

## INTO THE UNKNOWN

35



THREE PROJECTS

MODEL: VOYAGER 2

GIANT POSTER

**FACT FILES ON:**

- ▶ *Searching the stars for life*
- ▶ *Advances in medicine*
- ▶ *Ghostbusting*
- ▶ *Strange worlds*
- ▶ *UFOs*
- ▶ *Earthly monsters*

